

CLAIMS

What is claimed is:

1. An inspecting apparatus for a semiconductor device comprising:
 - a match plate;
 - a contact module combinable with the match plate and comprising a radiator to radiate heat from the semiconductor device to the outside, and a tester to press leads of the semiconductor device; and
 - a heat pipe provided in the radiator.
2. The inspecting apparatus according to claim 1, wherein the radiator comprises:
 - a heat sink;
 - a contact pusher to contact the semiconductor device; and
 - a heat flat pusher provided between the contact pusher and the heat sink,
wherein the heat pipe is provided inside the heat flat pusher to transfer the heat from the semiconductor device to the heat sink via the contact pusher.
3. The inspecting apparatus according to claim 2, wherein the tester comprises:
 - a contact block combined with the match plate and having a heat sink seat to accommodate the heat sink and a through hole through which the heat flat pusher passes; and
 - a lead pusher combined with a bottom of the contact block, and pressing the leads of the semiconductor device selectively by elevation of the contact block by the match plate.
4. The inspecting apparatus according to claim 3, wherein the contact block is formed with an air inlet through which air flows into the heat sink seat and an air outlet through which the air is exhausted to the outside.
5. The inspecting apparatus according to claim 4, further comprising a first elastic member installed on a circumferential part of the heat flat pusher to lift the contact block and the lead pusher up and down elastically.

6. The inspecting apparatus according to claim 5, further comprising a second elastic member installed between the match plate and the contact block to press the lead pusher against the leads of the semiconductor device by elevation of the contact block elastically by the match plate.

7. The inspecting apparatus according to claim 6, wherein the first elastic member and the second elastic member comprise springs, respectively.

8. The inspecting apparatus according to claim 2, wherein the heat sink, the contact pusher, and the heat flat pusher are made of material containing aluminum.

9. The inspecting apparatus according to claim 1, wherein the heat pipe is a metallic tube.

10. The inspecting apparatus according to claim 1, wherein the heat pipe comprises an inner space.

11. The inspecting apparatus according to claim 10, wherein the heat pipe contains a working fluid sealed in the inner space.

12. The inspecting apparatus according to claim 11, wherein the inner space maintains a vacuum.

13. The inspecting apparatus according to claim 11, wherein the working fluid occupies 10 to 50 percent of a volume of the inner space.

14. The inspecting apparatus according to claim 2, wherein the heat pipe comprises:
a first end disposed close to the contact pusher; and
a second end disposed close to the heat sink.

15. The inspecting apparatus according to claim 14, wherein the heat pipe comprises an inner space to contain a working fluid, and the working fluid accelerates a transfer of the heat from the contact pusher to the heat sink.

16. The inspecting apparatus according to claim 1, wherein the heat pipe has a high thermal conductivity.

17. The inspecting apparatus according to claim 1, wherein the heat pipe is made of aluminum.

18. A radiator for a semiconductor inspecting device comprising:
a heat sink;
a contact pusher to contact a semiconductor device;
a heat pipe provided between the heat sink and the contact pusher to transfer heat from the semiconductor device from the contact pusher to the heat sink;
wherein the heat pipe comprises an inner space containing a working fluid.

19. The radiator according to claim 18, wherein the working fluid occupies 10 to 50 percent of a volume of the inner space.

20. The radiator according to claim 18, wherein the heat pipe is made of aluminum.

21. An apparatus for testing semiconductor devices comprising:
a match plate having a plurality of combining holes; and
a plurality of contact modules combined with the plurality of combining holes respectively, the contact modules comprising:
a plurality of contact pushers to transfer heat from the semiconductor devices,
a plurality of heat flat pushers respectively comprising a plurality of heat pipes, the heat flat pushers combined with the contact pushers respectively, to transfer heat from the contact pushers,
a plurality of heat sinks to transfer heat from the heat flat pushers and to radiate the heat away from the semiconductor devices, the heat sinks being combined with the heat flat pushers respectively, and formed with a plurality of grooves to increase a surface area of the heat sinks,
a plurality of lead pushers to selectively contact leads of the semiconductor devices, and

a contact block combined with the lead pushers, the contact block being elastically combined with the contact pushers by a plurality of first elastic devices and elastically combined with the match plate by a plurality of second elastic devices, the contact block being formed with a plurality of through holes in which the heat flat pushers are located.

22. An inspecting apparatus for a semiconductor device comprising:

a match plate;

a contact module combined with the match plate, the contact module comprising:

 a radiator to contact the semiconductor device, wherein the radiator comprises,

 a heat sink,

 a contact pusher to contact the semiconductor device having the thermally conductive pad attached to a contacting face, and

 a heat flat pusher combined with the contact pusher and the heat sink to transfer heat from the semiconductor device to the heat sink via the contact pusher; and

 a tester to contact leads of the semiconductor device, wherein the tester comprises:

 a contact block combined with the match plate, and formed with a heat sink seat to accommodate the heat sink, and with a through hole through which the heat flat pusher passes; and

 a lead pusher combined with a bottom of the contact block, to contact the leads of the semiconductor device selectively according to a positioning of the contact block.

23. The inspecting apparatus according to claim 22, wherein the contact block is formed with an air inflow hole and an air outflow hole to increase air circulation and improve cooling.

24. The inspecting apparatus according to claim 22, further comprising a first elastic member installed on the circumference of the heat flat pusher to elastically connect the contact block and the lead pusher.

25. The inspecting apparatus for the semiconductor device according to claim 22, further comprising a second elastic member installed between the match plate and the contact block, to allow the contact block to move up and down elastically corresponding to ascent and descent of the match plate, thereby pressing the lead pusher against the leads of the semiconductor device.

26. The inspecting apparatus for the semiconductor device according to claim 24, further comprising a second elastic member installed between the match plate and the contact block, to allow the contact block to move up and down elastically corresponding to ascent and descent of the match plate, thereby pressing the lead pusher against the leads of the semiconductor device.

27. The inspecting apparatus for the semiconductor device according to claim 24, wherein the first elastic member comprises a spring.

28. The inspecting apparatus for the semiconductor device according to claim 25, wherein the second elastic member comprises a spring.